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The importance of correct execution of orthodontic devices

ONET M, SZEKERS C, LILE I, HOSSZU T, ELISEI G, FREIMAN P, DUMINICĂ T.

VGWU ARAD Chair of Orthodontics and Pediatric Dentistry

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INTRODUCTION

1. The basis of the acrylic plate is the mucosal support area of the device. Here is where all components of the orthodontic device are anchored: screws, springs, and clasps. The plate covers the hard palate, and the distal limit of the device should be up to the junction line of the last molars erupted on the arch. If a screw is used, the plate will be cut up to the right place, according to the objectives set for solving the anomaly.

2. Anchoring elements:

Clasps, for example Adams clasps, achieve firm anchorage in isolated teeth. It starts at the basis of the plate, and then passes over the masticatory niche tangentially to the distal face of the molar. On the junction of the proximal face to the vestibular face, it forms a loop in the retentive portion, then the clasp continues with a horizontal portion, parallel to the occlusal surface, until it reaches the other retentive portion between the vestibular and the mesial - proximal face where, it forms a loop, climbing on this face up to the highest point (above the point of contact, if any), then goes tangentially with the mesial face until after the maximum convexity and descends undulatingly to the basis of the plate to ensure higher resistance to traction. There are several types of Adams clasps: the loop-shaped traction clasp, the single-arrow clasp, the accessory Adams semi-clasp. They are made from 0.7 mm Wiepla wire. Stahl clasps: the plate is anchored in an interdental space, passes over the masticatory niche in the vestibular par of the arch, and ends with a loop in the interdental space, so that the top of the loop is directed to the interdental point and over the maximum convexity, and the lateral parts of the loop rest on the proximal-vestibular faces of adjacent teeth. They are made from 0.7 mm Wiepla wire.

3. Active elements may be:

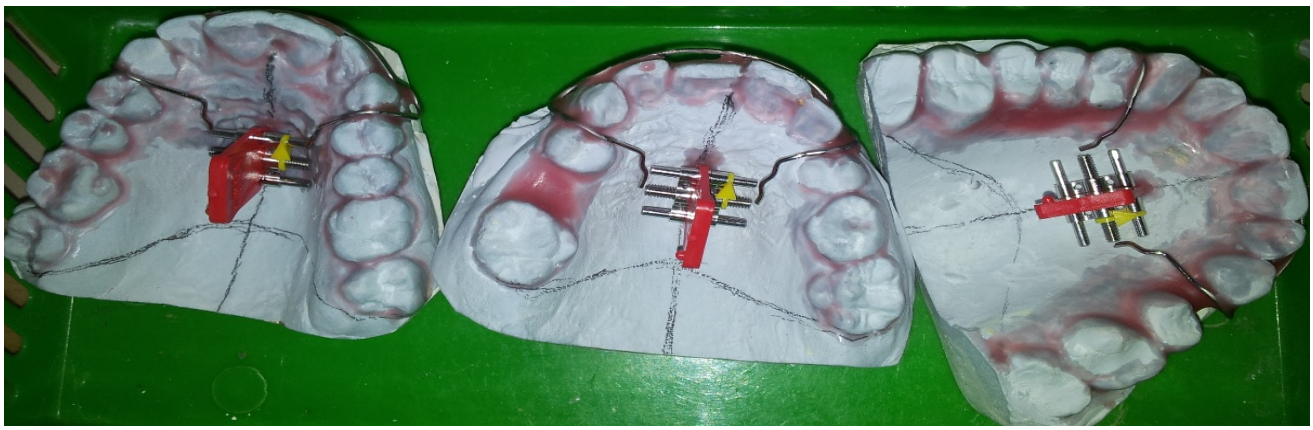
Orthodontic screw: it is an active element that can exert intermittent forces on dentoalveolar arches and can achieve the expansion of arches or other types of mezialization or distalization movements of a group of teeth. There are unidirectional and bidirectional screws, as well as 3D screws for 3 directions: for the lateral group on both hemiarches and for the frontal group.

The vestibular spring is made of 0.6-0.7 mm thick wire, round on the section, and consists of two arms that are fixed in the plate in the interdental space between canines and premolars one; two activation loops in the canines, the most frequently used being U-shaped, and a medium active portion which comes into contact with the incisors and performs frontal teeth retruding, intruding or extruding.

Secondary springs are smaller and operate on a reduced number of teeth, with varied forms.

MATERIALS AND METHODS

The screw is prepared and fixed to the model using wax. It will always be placed parallel to the occlusal plane and perpendicular to the plate's sectioning line. The direction of action and the section of the plate vary with the anomaly. A 90-degree opening per week results in a 0.1 mm opening on each side. In the palatal plate of expansion, the anterior edge of the screw comes over of the first premolars.

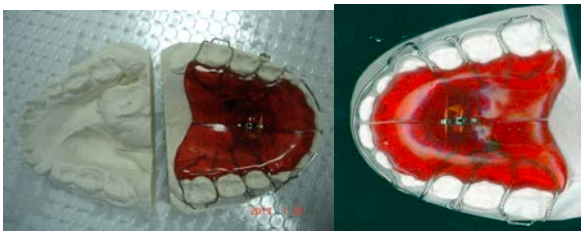


After the springs, clasps and screws have been fixed with wax onto the model, wax is also dripped under the retentive areas or edentulous spaces so as to prevent acrylate from entering these unwanted areas, avoiding the impossibility of removing the plate from the model without fracturing dental areas with increased retentiveness.

Acrylate is applied using the "salt and pepper" method, that is, liquid acrylate is added to a selected amount of powder until the desired consistency is obtained. If occlusal splint is desired, it is modeled at this point directly with thermo-polymerizable acrylate.

This is followed by the boiling procedure: water at 40 degrees Celsius is poured into a pressure vessel to fill ¾ of its volume, and the model is sunk in it with all of the above-mentioned accessories; then the lid is put and pressure of 2.5 bar is introduced for about 20 minutes.

We wait for the model to cool, with the orthodontic device in gross phase, we remove the device from the model, and then we process the plate and polish the acrylate using special milling cutters.



DISCUSSIONS

The dental technician must also take into account the patient's occlusion, so if a little patient must wear two maxillary and mandibular plates, clasps must be applied so as not to interfere with each other, i.e. not

rise during occlusion.

The clasps' starting point at the basis of plate is very important if we want to move a tooth in a mesial-distal direction. The clasp must be anchored long enough in the basis of the plate and start from the direction in which we want to move the tooth, so that after polishing the acrylate corresponding to the tooth we may activate and reactivate concomitantly to the tooth's movement.

The vestibular spring must be long enough if we have dento-alveolar disharmony with accentuated crowding, so that after dilatation the "U" loop of this arc does not flatten and become useless after activation.

The Adams clasp must have loops of an appropriate size so that the Crampon tongs can catch these loops for activation. The right vestibular portion should not be too far removed from the vestibular face of the tooth, as it becomes uncomfortable for the patient.

RESULTS

With patience, skill and a great deal of attention and imagination on the part of the technician, assisted by the dentist, a wide range of orthodontic devices can be readily accomplished, with the goal of solving anomalies under the easiest, most comfortable conditions for little patients in a short period of time.

REFERENCES

1. Grivu O, Jianu R, Podariu A – Tehnica Ortodontică, Editura Mirton Timișoara, 1994
2. Graber TM, Swain BF – Grundlagen und moderne Techniken der Kieferorthopadie, Quintessenz-Verlag-GMBH, 1989
3. Grohmann U – Kieferorthopadische Apparaturen, Bildatlas, Steinkopff Verlag Darmstadt, 2005
4. Wirtz U – O-atlas der Kieferorthopadischen Technick, Dentaurum, 2007.